

# Vaccine may help eradicate PRRS

By PAULA MOHR

**R**ESearch conducted on porcine reproductive and respiratory syndrome disease by the University of Minnesota and MJ Biologics, Mankato, has led to the decoding of the PRRS virus and the development of custom vaccines.

"The potential is that, with excellent cross protection, we could significantly reduce PRRS in the pork industry, and with widespread use, could potentially eradicate the disease," says Mark Whitney, University of Minnesota swine Extension program leader. "This means a significant reduction in cost and time spent fighting the disease the past 20-plus years for both Minnesota and the U.S. swine industry."

The pork industry is a substantial economic contributor to Minnesota's

## Key Points

- Custom vaccines are now available for deadly porcine disease.
- University of Minnesota and MJ Biologics worked to break PRRS virus' genetic code.
- Vaccination might end up eradicating PRRS across the U.S.

economy. The state ranks third nationally in hog production.

Patent-pending Selectigen MJPRRS technology offers veterinarians and swine producers a new tool in the ongoing battle against the PRRS virus. By breaking the genetic code of the PRRS virus, the technology allows the production of autogenous vaccines that are tailored to each unique swine production system.

This technology utilizes an innovative method of classifying PRRS viruses

based on their immunological properties, allowing for the creation of new custom vaccines as a tool against intra-farm mutations.

In addition, the enhanced cross-protection capability helps to reduce financial losses from new strains introduced into the farm.

## Vaccine offers cross protection

In controlled studies of pregnant sows conducted by independent veterinarians and the U-M, the MJPRRS vaccine provided excellent cross protection against heterologous strains of PRRS virus. University researcher HanSoo Joo is responsible for much of the technology that made development of this vaccine possible, Whitney adds.

"By using the vaccine in herds with a history of PRRS virus, we have been able to prevent prenatal losses while

stabilizing the herds and simultaneously protecting the sow population against clinical disease outbreaks from 'new' virus strains entering the herd," says veterinarian Paul Armbricht, Lake City, Iowa.

Some veterinarians and swine producers have experienced success with the vaccine.

"MJPRRS technology appears to be one of the biggest breakthroughs in disease control across the swine industry in the last 10 years," says veterinarian Mark Fitzsimmons, Eagle Lake. "Finally we have some light at the end of the tunnel in controlling and preventing this devastating disease."

MJPRRS autogenous vaccine is only available through licensed veterinarians. For more information, contact MJ Biologics at 507-385-0299 or go online to [www.mjbio.com](http://www.mjbio.com).

# Team discovers best tests for Johne's disease

**I**f you are culling skinny cows, you might want to consider Johne's disease, a contagious, slow-progressing disease of the ruminant tract caused by *Mycobacterium paratuberculosis*.

This silent bacterium usually infects an animal when it is extremely young but does not show itself until the animal is an adult. In the meantime, infected animals are shedding the bacterium and infecting herdmates as well as newborn and young calves.

"Research has brought many, many good Johne's tests to the table," says veterinarian and Johne's expert Mike Collins, School of Veterinary Medicine, University of Wisconsin-Madison. "Which test is best was answered by research conducted by the 'Best Test Team.'"

This "Best Test Team" consisted of researchers from five universities: Colorado State University, Texas A&M University, University of California-Davis, University of Minnesota and University of Wisconsin. Collins says that the team's objective was to define the best course of action regarding testing for paratuberculosis in dairy and

## Key Points

- Five universities, including U-M, evaluated Johne's tests to see which are best.
- Bacterial culture of six fecal samples is cost-effective for dairy operations.
- Individual and herd tests by bacterial culture or ELISA best for beef herds.

beef herds by business type — commercial or seedstock — paratuberculosis infection status and infection prevalence.

First, the team identified eight reasons why a dairy or beef herd should be tested for Johne's disease:

- to classify a herd as infected
- to estimate within-herd prevalence
- to control the disease
- surveillance
- eradication
- to confirm a clinical diagnosis in a herd with no confirmed Johne's disease cases
- to confirm a clinical diagnosis in known infected herds
- biosecurity — to test an animal before it enters the herd

Next, the team evaluated several types of tests are available in the detection of paratuberculosis in cattle. These include bacterial culture of fecal samples, gene detection assays, antibody assays and histopathologic evaluation of tissues.

## Results for dairy herds

The team found that, for commercial and seedstock dairy herds, bacterial culture of six fecal samples obtained from the environment is sensitive and the most cost-effective method for determining whether a dairy herd is infected.

"However, finding that all six samples yield negative results does not guarantee the herd is not infected," Collins says. "The second-best testing option for this situation is PCR [polymerase chain reaction] assay of fecal samples collected from the environment."

He adds that owners of herds with negative culture or PCR test results on all six samples should be encouraged to enroll their herds in the U.S. Test-Negative Program.

A test gaining popularity within the dairy industry is the milk ELISA (enzyme-

linked immunosorbent assay). The milk ELISA is less costly than a standard serum ELISA, and sample collection may be incorporated into routine Dairy Herd Improvement Association sampling.

Beef cow-calf and seedstock herds may be whole-herd tested by either bacterial culture of fecal samples or by an ELISA, with positive results for individual cattle confirmed by bacterial culture of fecal samples. An alternative is a bacterial culture of fecal samples obtained from the environment that can be used for intensively managed herds.

"Manage Johne's first and test second," Collins says. "Testing recommendations should come from your veterinarian, who can help you determine which management practices work best for your situation and help you control Johne's disease."

For more information, go to the Online Producer Education Course Web site at [www.vetmedce.org/index.pl?id=110337](http://www.vetmedce.org/index.pl?id=110337). Producer modules cover all species, with the dairy version also having a Spanish module.

Source: National Institute for Animal Agriculture

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